

Appl. No. 09/321,323
Filed: August 2, 2001
Page 10

REMARKS

Claim 1 has been amended to further define Applicants' process and distinguish it from the cited prior art. Since the amendments merely involve incorporating the subject matter of Claims 2 and 3 into the independent claim, no new issues are presented. Therefore, entry of this amendment is clearly appropriate. Favorable reconsideration by the Examiner and withdrawal of the outstanding rejections are respectfully solicited in light of the amendment and the accompanying remarks.

The present invention makes it possible to produce a spunbond nonwoven fabric using a high level of reclaimed polypropylene, while maintaining a level of quality comparable to that which is obtained when using 100 percent virgin polymer. Applicants' process, as defined in the claims of record, is both novel and nonobvious with respect to the prior art.

Claims 1-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 99/16947. This published application describes a spunbond nonwoven fabric made from crimped multi-component filaments. The filaments, more particularly, contain a crimp enhancement additive, a butylene-propylene copolymer, in one of the components. The other component is typically polyethylene. In FIG. 2b and the accompanying text, the reference describes an eccentric sheath core filament containing a core component A which is preferably polypropylene and a sheath component B which is preferably polyethylene and contains the crimp enhancing additive. At page 18, line 21 to page 19, line 10, the reference mentions that reclaimed and recycled polymers can be added to the polymer component B that forms the sheath component. Specifically, the patent states that the reclaim polymer can be added to this component in an amount up to about 20 percent by weight.

Applicants' invention as defined in the claims of record differs over this reference in a number of significant and fundamental respects. Each of the independent claims of record clearly specifies that the polymer component containing reclaimed polypropylene is present in the core of the sheath core bicomponent filament. In the cited reference, the reclaim polymer is present in the sheath. It would not have been obvious to modify the

Appl. No. 09/321,323
Filed: August 2, 2001
Page 11

filaments of the cited reference by putting the reclaim polymer in the core instead of the sheath. The reference clearly requires the presence of a crimp enhancement additive in the sheath component in order to alter the solidification rate relative to the core component in order that the multi-component filaments will have latent crimpability. The crimp enhancement additive also functions as a polymer compatibilizer. Consequently, the presence of the crimp enhancement additive in the sheath component allows for blending in reclaim polymer with the polymer component B that forms the sheath. Therefore, persons of ordinary skill in the art following the teachings of the cited reference would have no reason or motivation to change the location where the reclaimed polypropylene is placed. Applicants' invention is based upon the recognition that reclaimed polypropylene can be incorporated into the core component of a sheath core bicomponent filament, with conventional or regular polypropylene resin being supplied to the sheath. Consequently, the reclaim polypropylene is "buried" within the filament.

The claims of record also clearly call for the use of a much greater amount of reclaimed polypropylene than is contemplated in the cited reference. The claims of record call for a total amount of reclaimed polypropylene in the filaments being 25% by weight or greater. The cited reference (page 19, lines 1-4) teaches that the reclaim polymer can be added to the sheath component in an amount up to about 20% by weight. This is 20% by weight of the sheath. Consequently, there is significantly less than 20% by weight of recycle or reclaim polymer in the total filament. Thus, for example, if the sheath comprises 50% by weight of the filament and recycle polymer were added at the maximum level of 20%, this would be only 10% by weight recycle polymer. It would not be obvious to persons of ordinary skill in the art that the amount of recycle polymer could be increased above this level. Persons of ordinary skill in the art know that when polypropylene is reclaimed and melted a second time, the rheological properties of the polymer are changed and the recycled polymer does not behave the same as virgin polymer during melt spinning. Persons of ordinary skill in the art, armed with this knowledge, would not expect to be able to simply substitute recycled polypropylene for virgin polypropylene and achieve the same results. In the present invention, the Applicants are able to use higher levels of reclaimed polypropylene than previously

Appl. No. 09/321,323
Filed: August 2, 2001
Page 12

thought possible by following the process steps as defined in the claims. This includes, among other differences, locating the reclaim polymer in the core rather than in the sheath as contemplated by the cited reference.

Applicants' process also uses a different type of melt spinning process from that contemplated by the cited reference. As seen in FIG. 1 of this application, the quench air from blower 31 is directed into the quench chamber 30. From there, the quench air and the filaments pass through a filament attenuator 32 where the filaments are attenuated and stretched. Independent Claims 1, 7 and 10 all positively recite directing the filaments and the quench air into and through a filament attenuator.

The melt spinning apparatus of the cited reference is of a different design. As is clearly seen in FIG. 1 of the reference, the quench chamber of the cited reference is open to the atmosphere. Therefore, the quench air from quench blower 20 simply blows across the curtain of filaments. There is nothing to cause the quench air to travel with the filaments through the attenuation chamber. Moreover, the reference clearly shows that the aspirating air used for attenuating the filaments in the fiber draw unit 22 is provided by a separate blower 24. Consequently, the quench process defined by Applicants' claims is fundamentally different from that which is taught or suggested in the cited reference.

From the foregoing comments, it should be evident that there are at least three fundamental differences between the process claimed by Applicants and that taught in the cited reference. These include (1) the location of the recycle in the core component of a sheath core filament, (2) the amount of reclaimed polypropylene present (25% or greater), and (3) the quench process used. Any one of these differences renders Applicants' claimed process novel and nonobvious over the prior art. However, the presence of all three of these, in combination, is nowhere suggested in the prior art and would not at all be obvious to the person of ordinary skill in the art. For these reasons, Claims 1-10 as now presented are clearly patentable over the prior art.

Referring now specifically to independent Claim 7, this claim additionally specifies that the first polymeric component is virgin polypropylene and the second polymeric component comprises reclaimed polypropylene. The cited reference teaches a

Appl. No. 09/321,323
Filed: August 2, 2001
Page 13

filament wherein the A component is polypropylene and the B component is polyethylene blended with a butylene-propylene copolymer crimp enhancement additive. This further aspect of the present invention as defined by Claim 7 and the claims dependent therefrom is neither taught nor suggested in the cited reference, WO 99/16947. Independent Claim 10 likewise specifies a first polymer component comprising virgin polypropylene and a second polymer component comprising reclaimed polypropylene and is likewise patentable over the prior art.

For the reasons noted, it is submitted that the claims of record clearly distinguish over the cited prior art and are in condition for allowance. Entry of the amendment and formal notification of the allowability of Claims 1-10 as now presented are earnestly solicited.

Respectfully submitted,

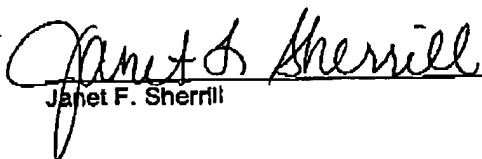


Raymond O. Linker, Jr.
Attorney for Applicant

ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
Tel Charlotte Office (704) 444-1000
Fax Charlotte Office (704) 444-1111
CLT01/4646039v2

CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that this paper is being facsimile transmitted to the U. S. Patent and Trademark Office at Fax No. (703) 872-9306 on the date shown below.


Janet F. Sherrill

August 31, 2004
Date

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☒ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.